

Catalogue of the Lepidoptera Phalaenae in the British Museum.
 Volume V. *Catalogue of the Noctuidæ in the Collection of the British Museum.* By Sir GEORGE F. HAMPSON, Bart. 8vo.
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THE fifth of Sir George Hampson's biennial volumes contains the classification of the Hadeninæ, the second of the subfamilies into which the author divides the great family Noctuidæ. The Noctuidæ were commenced in vol. iv., which contained about 1200 species of Agrotinæ; the Hadeninæ are somewhat less numerous, 946 species belonging to 78 genera being described in vol. v. The genus *Hadena* itself is restricted to the small group called *Neuria* by Guenée, *Noctua reticulata*, Vill. (= *saponarice*, Esp.), being chosen as the type, because it is the first species included by Schrank under *Hadena*. The classification of the Noctuidæ has altered very much of late years, and Sir George includes many genera formerly placed in separate sections, such as *Leucania*, Ochs., in the Hadeninæ. Several genera, such as *Polia*, Walk., are given a very wide extension, no less than 216 species being described under *Polia*. In such a case it is safe to predict that the genus will probably be subdivided later on. The arrangement of the present volume is similar to those which have preceded it, and Mr. Horace Knight's plates are deserving of high praise.

MISCELLANEOUS.

On a Modification of the Tentacular Apparatus in certain Species of Madrepora. By ARMAND KREMPF.

A CURIOUS arrangement presented by a species of the genus *Madrepora* (*M. Durvillei*) was noticed by Fowler in 1866. I have found it in three species of the same genus from the Gulf of Tadjoura. Not one of these three forms appears to me to be capable of identification with that which formed the subject of Fowler's investigations.

I note that it is a question of a certain dimorphism affecting a third of the colony examined, and consisting, according to this observer, in a marked hypertrophy of the endodermic epithelium of the upper part of six macenteric mesenteries of the animal. The formation is traversed in its whole length by a sagittal U-shaped canal on the ectodermic walls, terminating in the pharynx in two distinct superposed orifices.

My observations have led me to an altogether different interpretation of the morphological value of these prolongations and of their U-shaped canal. Contrary to all appearance, they do not belong to the mesenteries; they only prolong these superiorly: they are in effect tentacles deformed by important modifications. As for the ectodermic canal which they contain in their median plane, it represents a portion of the buccal disc which a fusion of two tentacles

has converted into a tunnel and buried in the depths of the body of the thus transformed polype. The following are the facts which have led me to these conclusions.

The determination of the analogies which exist between the tissue of the voluminous endodermic enlargements of *Madrepora* and that of the organ of which I have established the homology with a tentacle in certain *Oculininae**—analogies which bear not only on the structure of the cellular elements, but also on the very special histochemical reactions of their contents—has from the very outset prepared me to understand the following anatomical conditions:—1. The tentacles, so well developed and so easy to observe even when contracted, in normal individuals, are completely wanting, at least in their usual form, on the buccal disc of modified individuals, which thus appear to be devoid of them. 2. The pharynx of these latter, characterized by its very diminutive length, its narrowness, its differentiated ectoderm, is not to be confounded with the irregularly pleated wide and long funnel which precedes it and on the vertical or oblique walls of which the two orifices of six U-shaped canals open. This funnel is, in effect, nothing more than the invaginated buccal disc of the polype, and, as is known, deprived of visible tentacles. The orifices of each of the canals are therefore not situate in the pharynx, but, and the relation is of capital importance, on the surface of the buccal disc: they are arranged along one of its radii, one in the neighbourhood of the mouth, the other on the marginal border. 3. I have been able to observe an individual which presented only one U-shaped canal-organ, that of one of the left directing partitions; all its other partitions were normal.

The animal was adult, provided with six endocœles and six ectocœles, and should have possessed twelve tentacles. An examination of its buccal disc shows (a) that it had but ten; (b) that the two vacant places, very clearly marked in the crown of tentacles and representing the two missing elements, corresponded precisely, one with the directive endocœle, of which the left mesentery was the only one modified, the other with its left ectocœle.

Collating these facts, one may deduce from them particularly:—

1. That there is a constant correlation between the presence of the U-shaped canal-organ in an individual and the apparent absence of tentacles on its buccal disc.

2. That the correlation is particularly manifest in the very clear case in which only a single organ is found in the individual, the case in which the two missing tentacles are those of the endocœle and ectocœle which it occupies.

3. That the plane in which the U-shaped canal with its two orifices is contained coincides with the plane of separation of two neighbouring tentacles.

I am now in a position to demonstrate how the transformations which give rise to the arrangement under consideration in certain

* *Seriaptora*, *Stylophora*, *Pacilopora*: it is the dorsal tentacle which, in these three genera, is modified, and not the ventral as I am made to say by an error in the text of my note ('Comptes Rendus,' 18th May, 1903).

individuals arise, solely at the expense of the oral disc and the tentacular apparatus by fusion of its elements in pairs.

If we imagine two contiguous tentacles in a state of semi-expansion; owing to their capitate form they come into slight contact by their superior extremities and so define, between their opposed faces and the portion of the buccal disc intercepted between their two bases, a gutter, open interiorly on the side of the mouth, exteriorly on the side of the margin of the tentacular disc. If this arrangement be fixed by, so to speak, soldering up the junction of the two surfaces which are in temporary contact, the gutter aforesaid becomes a canal, which is at once recognizable as the U-shaped canal.

It is situate in an intertentacular plane, its two orifices open on the oral disc, one on the outer side, the other on the inner of the crown of tentacles; lastly, the epithelial covering of its bore is strictly ectodermic.

Returning to what has been described as the soldering together of two tentacles, if we conceive it to be accompanied by the absorption of the two ectodermic surfaces along the line of which it has taken place, it will in reality be effected through the intermediary of their mesogleal lamella. We also note at the same time that these two latter, fused into one, appear to continue, above the U-shaped canal, the single mesogleal lamella of the subjacent mesentery. Now if we remove the special histological characters (nematocyst, nervous system) from what is left of the ectoderm of the tentacles, and give, on the other hand, to the cells of their endoderm the large size which is known to be the case, we have completed the synthesis of a U-shaped organ without having supplied the normal polype with any elements other than those which we intended to employ.

All that now remains is to make the absence of the U-shaped canal-organ on the two partitions of the directing dorsal endocœle agree with the apparent disposition of its tentacle. This latter, not having experienced the fate of its neighbours, ought to be recoverable.

Its non-existence is, in fact, more apparent than real. A study of sections has enabled me to discover its presence in the gastro-vascular cavity with ease. Invaginated in its endocœle, with its short axial ectodermic canal opening on the buccal disc and its endoderm with its voluminous cells, it is in every sense comparable to its homologue (dorsal tentacle) in the Oculininae. It is thus the totality of the elements of the tentacular apparatus that the change affects in *Madrepora*, while in *Pecillopora* it affects but a small part ($\frac{1}{4}$), and in *Seriatopora* and *Stylophora* $\frac{1}{12}$.

The presence of like formations in creatures exhibiting such differences of structure as the Oculininae and the Madreporinae, a presence which renders their existence possible in all the Hexacorallids under aspects which may otherwise vary between one group and the other—the considerable development which they assume in those individuals in which they are present,—causes one to suspect that they must play an important rôle in the physiology of these animals. —*Comptes Rendus*, tome cxxxviii. no. 24, pp. 1519–1521 (13th June, 1904).